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Application No. 09/960,575
Docket No. 740819-651

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The oxidation speed of silicon is increased on a region containing boron having an oxidation enhanced diffusion effect such as the high-concentration boron region 29. Therefore, when forming the capacitance insulating film 18 on the active region 16, the thickness of the boundary portion Rcr of the capacitance insulating film 18 that is in contact with the isolating region 14 is large. In other words, the capacitance insulating film 18 having portions with different thicknesses can be formed in one process. Thus, the breakdown voltage of the boundary portion Rcr of the capacitance insulating film 18 that is in contact with the isolating region 14 can be increased. For example, in the case of this embodiment, the thickness of the capacitance insulating film 18 on the active region is 4 nm, whereas the thickness of the boundary portion Rcr of the capacitance insulating film 18 that is in contact with the isolating region 14 is 8 nm. For this reason, the breakdown voltage of the boundary portion Rcr of the capacitance insulating film 18 that is in contact with the isolating region 14 is about twice the breakdown voltage of the capacitance insulating film 18 on the active region 16, and the breakdown of the capacitance insulating film 18 did not occur until the value of S/L reached about 8. This indicates that according to this embodiment, the ratio of the total sum (S) of the exposed areas of the electrode pad 24 in the contact holes 28 with respect to the total sum (L) of the widths (w) of the lead conductive films 22 on the boundary line between the active region 16 and the isolating region 14 can be increased.

In the Claims:

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Please cancel claim 5 without prejudice or disclaimer to the subject matter disclosed therein.

Please amend claims 1, 4 and 6 as follows:

1. (Amended) A semiconductor device comprising:

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a semiconductor substrate including an active region and an isolating region provided so as to enclose the active region;

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cont.
a capacitance insulating film that is provided on the active region and in contact with the isolating region;

an upper electrode provided on the capacitance insulating film so as to be spaced away from the isolating region;

an electrode pad provided on the isolating region;

a lead conductive film provided over a part of the capacitance insulating film and a part of the isolating region for connecting the upper electrode and the electrode pad; and

an interlayer insulating film provided over the substrate,

wherein contact holes penetrating the interlayer insulating film to reach the electrode pad are formed, and

a ratio of a total sum of exposed areas of the electrode pad in the contact holes, with respect to a total sum of widths of the lead conductive films on the boundary line between the active region and the isolating region, is small enough so that a breakdown ratio of the capacitance insulating film will have no practical problem.

4. (Amended) A semiconductor device comprising:

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a semiconductor substrate including a first active region an isolating region formed so as to enclose the first active region, and a second active region provided such that the isolating region is sandwiched by the second active region and the first active region;

a first capacitance insulating film that is formed on the first active region and has a boundary portion in contact with the isolating region;

a second capacitance insulating film formed on the second active region;

an upper electrode provided on the first capacitance insulating film so as to be spaced away from the isolating region;

an electrode pad formed on the isolating region;

a lead conductive film provided over a part of the first capacitance insulating film and a part of the isolating region for connecting the upper electrode and the electrode pad; and

an interlayer insulating film provided over the substrate,